The First Lord and the Chancellor of the Exchequer recall the attention of the Board to the question of the future housing of the University of London in the present Imperial Institute buildings, and they refer to the Board's Minute of February 16 last.

In pursuance of that Minute, conferences have been held between representatives of the University, of the Institute and of Her Majesty's Government, which have resulted in definite arrangements, subject only to adjustment on points of detail. The report of the Government representatives is now before the Board together with correspondence and memoranda connected with the subject.

Before proceeding to state the conclusions as affecting the University, the First Lord and Chancellor of the Exchequer desire to refer in general terms to the arrangements which have been made by Her Majesty's Government with the governing body of the Institute respecting the whole group of buildings now in their possession.

They are as follows :—

(1) The lease under which the buildings are held from the Commissioners for the Exhibition of 1851 will be transferred to the Commissioners of Works as representing the Crown, and the latter Commission will thereupon become responsible for maintenance, rates, custody and protection of the buildings. The Commissioners for the Exhibition of 1851 have assented to this arrangement.

(2) An agreed portion of the buildings will be assigned for the use of the Institute, free of rent, but with the responsibility for internal maintenance and repairs of that portion.

(3) The cost of removing the Institute from the portions of the buildings which they will surrender, including the necessary structural alterations, will be paid by Government.

(4) In consideration of the transfer of the lease, Government will provide funds sufficient to pay off the existing mortgage of 40,000*l.* on the building, and also to discharge a floating debt of the Institute, not to exceed in all 15,000*l.*

These arrangements will enable Her Majesty's Government to offer to the London University accommodation in the building which may roughly be described as follows :—

The eastern and central portions of the main block, including the principal entrance, vestibule and staircase, and the Great Hall ; subject to occasional use by the Institute of certain portions of the central block when not required by the University, under regulations approved by the Chancellor of the University, and subject also to certain reservations in favour of the Government of India.

Also a portion of the upper floor of the inner block of building running east and west ; and the temporary structure now standing in the South-Eastern Court.

This offer, which provides much more space than the present building in Burlington Gardens, has been accepted by the Senate of the University.

The principal structural alterations and adaptations required are—

(*a*) For the University—the provision of suitable lavatories and refreshment accommodation for candidates, and, if desired, the construction of a separate staircase giving access for candidates to examination rooms on the upper floors :

(*b*) For the Institute—the construction of a new entrance at the western end of the main block, the provision of new library and dining accommodation for Fellows, and the redecoration of rooms to which some of the services (Colonial and Indian) now provided in the eastern portion of the building will be transferred.

The University will occupy its new quarters under conditions substantially the same as those under which it now occupies the building in Burlington Gardens.

As regards accommodation for the practical examinations of the University in physics and chemistry, it has been agreed that this shall be provided in the new buildings about to be erected for the Royal College of Science, subject to arrangement between the two bodies as to dates of user. The Science and Art Department will take charge of, and keep in order, the instruments and appliances for the examinations.

The formal transfer of the lease will be carried into effect by the Solicitor to this Board ; and the First Commissioner of Works should report at once as to the cost of the necessary works, as to arrangements for custody of the building, and as to the terms upon which the Institute should become tenants of the part of the building to be assigned to them.

The formal concurrence of the University and of the Institute, subject to settlement of details, has been obtained.

My Lords concur. They take note of the statements of the First Lord and Chancellor of the Exchequer, and desire that the necessary steps may be taken for carrying them into effect.

NOTES.

THE seventy-first meeting of German Naturalists and Physicians will be held at Munich on September 17–23. According to the final programme of arrangements, the two general meetings will be held in the Königliche Hoftheater. At the opening meeting, on Monday, September 18, the following lectures will be delivered :—Dr. Nansen, on his journey towards the North Pole, and its results ; Prof. v. Bergmann, Berlin, on the use of radiography to surgery ; and Prof. Förster, Berlin, on the progress of astronomical thought during the past hundred years. At the second general meeting, on Friday, September 22, Prof. Birch-Hirschfeld, Leipzig, will lecture on science in relation to medicine ; Prof. Boltzmann, Vienna, on the development of the methods of theoretical physics in modern times ; and Prof. Klemperer, Berlin, on Liebig and medicine. There will be thirty-seven sections for scientific papers, seventeen being devoted to purely scientific subjects, and twenty to medicine. In a general meeting of the scientific sections Prof. Chun, Leipzig, will give an account of the results of the German Deep Sea expedition. A report will be presented by Prof. Bauschinger (Berlin), Prof. Mehmke (Stuttgart), and Prof. Schülke (Osterode) on the question of the decimal division of time and angle—a subject which will also be dealt with in a congress to be held in connection with the Paris Exposition next year. In a general meeting of the medical sections, Prof. Marchand (Marburg) and Prof. Rabl (Prague) will report upon the relation of pathological anatomy and general pathology to embryology, with special reference to the cell theory.

HITHERTO the overhead system of conveying electrical energy for driving tramcars has been the one most commonly adopted. The London County Council has, however, just decided to test underground systems of electric traction upon one of their lines. The recommendation of the Highways Committee, adopted on Tuesday, is as follows :—"That the estimate submitted by the Finance Committee for 10,000*l.* be approved ; and that the Council do authorise the expenditure by the Highways Committee of that sum for the preparation of plans, specifications, and estimates, and other preliminary expenses, in connection with the reconstruction, for the experimental use of underground systems of electrical traction, of that part of the London County Council tramways between Westminster Bridge and Tooting ; and that the committee be authorised to make all necessary arrangements for the purpose above referred to."

THE Duke of Bedford has been elected by the Council President of the Zoological Society of London, to fill the vacancy caused by the death of the late Sir William Flower.

UPON the recommendation of the Governor-General of India in Council, Her Majesty's Government has conferred upon Surgeon-General Sir J. Fayrer, Bart., K.C.S.I., Indian Medical Service, as a reward for distinguished and meritorious service, a good service pension of 100*l.* per annum.

THE Welby Prize of 50*l.*, offered for an essay on "The causes of the present obscurity and confusion in psychological and philosophical terminology, and the directions in which we may hope for efficient practical remedy," has been gained by Dr. Ferdinand Tönnies, whose essay, translated by Mrs. B. Bosanquet, appears in the current number of *Mind.*

PROF. GUIDO CORA, of Rome, has been elected (by Royal decree) a member of the Upper Council of the Geodetical Works of Italy (Consiglio Superiore dei Lavori Geodetici dello Stato).

THE expedition from the Liverpool School of Tropical Diseases, to which reference has already been made (p. 278), left the Mersey on Saturday in the steamer *Fantee*. Freetown will be the centre of experiments, with special regard to Major Ross's theory as to malaria being propagated by mosquitoes.

THE medical authorities of the Owens College and of the Royal Infirmary, Manchester, have been asked by the Chamber of Commerce to consider the advisability of forming a Manchester committee to co-operate with the Liverpool committee in the establishment and support of the Liverpool School for the study of tropical diseases.

THE annual congress of the British Medical Association was opened at Portsmouth on Tuesday. The president, Dr. Ward Cousins, delivered an address in which he sketched the progress made during the present century in medicine and surgery, with particular reference to recent discoveries in pathology and biology.

THE detailed programme of arrangements for the reunion of the Institution of Electrical Engineers in Switzerland, to be held in Switzerland from September 1 to September 9, has now been issued. The Council have decided that, with the exception of candidates for election, only members (of all classes in the Institution), and ladies and children accompanying them, can be authorised to take part. A number of visits to works and manufactories, and excursions to places of interest, have been arranged, and the programme provides opportunity for members of the Institution to spend a pleasant week in Switzerland.

THE sixth International Agricultural Congress will be held from July 1-8, 1900, in connection with the Paris Universal Exhibition of next year. The work of the congress will be divided into seven sections, as follows: (1) rural economy (agricultural credit, agricultural associations, land surveying, agrarian questions); (2) agricultural education (experimental stations, field experiments, &c.); (3) agricultural science (application of science to agriculture, agricultural improvements); (4) live stock; (5) practical agriculture (industrial crops and agricultural industries); (6) special crops of the South (silk production, early fruits and vegetables, perfume plants and colonial productions); (7) injurious insects and parasites (international measures for the protection of useful animals). Copies of the detailed programme may be obtained on application to the English representative of the International Agricultural Commission, Sir Ernest Clarke, at 13 Hanover Square, London, W.

THE Baly Gold Medal of the Royal College of Physicians of London, instituted in 1866 by Dr. F. D. Dyster, of Tenby, "in memoriam Gulielmi Baly, M.D.," which is awarded every alternate year on the recommendation of the president and council to the person who shall be deemed to have most distinguished himself in the science of physiology, especially during the two years immediately preceding the award, has been awarded to Dr. C. S. Sherrington, F.R.S., Professor of Physiology in University College, Liverpool.—The report of the Laboratories Committee of the College states that, since March 10 last, 1100 doses of antitoxin, each containing 2000 units, and 4425 doses, each containing 4000 units, for the treatment of diphtheria in the hospitals of the Metropolitan Asylums Board have been supplied and all the demands fully met. During this period 19,900,000 units have been supplied. During the same period five doses of 4000 units each have been supplied to the medical officers of health according to instructions received from the Metropolitan Asylums Board. Under the grant from the Goldsmiths' Company 459 doses of antitoxin containing 1,134,000 units have been supplied to the general and children's hospitals in or near London.—Dr. Arthur Foxwell, of Birmingham, will deliver the Bradshaw Lecture of the College on November 2. Dr. P. Horton Smith has been appointed Goulstonian Lecturer, and Dr. W. B. Cheadle Lumleian Lecturer for 1900, and Prof. W. D. Halliburton the Croonian Lecturer for 1901.

THE death is announced of Prof. Balbiani, professor of comparative embryology in the Collège de France.

THE expedition organised by the Peary Club, of New York, for the relief of Lieut. Peary in the Arctic regions started a few days ago. Prof. William Libbey, of Princeton University, is chief of the expedition, and with him are Prof. W. F. McClure, Dr. Arnold E. Ortman, Mr. Charles F. Silvester, and two representatives of the United States Coast Survey. The first object of the expedition is to take provisions and other supplies to Lieut. Peary. After the stores have been unloaded from the *Diana*, the return trip will be converted into a tour for scientific explorations. Chiefly deep sea investigations will be carried on, and specially prepared dredging apparatus have been provided for this purpose. It is expected that the party will return about October 1.

THE Bill having for its object the sanitary regulation of oyster beds has been withdrawn. When the order for the Committee stage of the Bill came before the House of Lords on Monday, Lord Harris said he had to move that the order be discharged. The intention of the Local Government Board in introducing the Bill was to protect as far as possible the public health from attack from diseased oysters; and the Board therefore selected as the local authorities by which the Bill was to be put into operation the councils of counties and boroughs which were concerned with the sanitary matters of their districts. But the Select Committee to whom the Bill was referred after the second reading decided that this was a matter which concerned more the health of the oyster than the health of the human being; and on a division they substituted the Local District Fisheries Committee, which looked after the well-being of fish for the councils of counties which were concerned with the public health as the authority in the Bill. But the Board of Trade, to whom the Bill was referred, decided that the change rendered the Bill impracticable; and in the circumstances the President of the Local Government Board does not intend to proceed further with the measure. The Bill was therefore withdrawn.

AT the meeting of the Institution of Mechanical Engineers held at Plymouth last week, a paper of much historic interest was read by Sir Frederick Bramwell, the subject being the South Devon atmospheric railway, preceded by remarks upon the transmission of energy by a partially rarefied atmosphere. Leaving out of consideration Savery's and such like machines for the raising of water by means of a partial vacuum produced by the condensation of steam, the first suggestion for transmitting energy by the rarefaction of air appears to have been made by Denis Papin in 1695. The matter lay in abeyance for more than a century, and then Mr. G. Medhurst proposed the propulsion of trains within a tube by means of air pressure. In 1824 John Vallance took out his patent, so very well known to all who have interested themselves in this subject of transmission of energy by the pressure of the atmosphere. Except that Vallance proposed to move his train by the rarefaction of the air, his scheme was a mere repetition of that of Medhurst already mentioned. But the man who really developed this mode of transmission of energy was John Hague. In addition to using a partial exhaust system to work cranes and tilt hammers, Hague applied this mode of transmitting energy to driving the machinery of powder mills, so as to remove the danger of steam-engine fire to any distance needed for safety. He also applied it to work the individual cutting-out presses and coining presses of a mint which he constructed for Rio Janeiro.

VALLANCE'S (Medhurst's) system of atmospheric railway was put to work in 1861, in the case of the "Pneumatic Postal Despatch," which was, in that year, laid down experimentally in Battersea Fields. In 1863 a line on this system was laid and got to work from Euston to the Holborn Post Office, a distance of about one and half miles, with the intention of going forward another mile to the General Post Office. In this case the ⌓-shaped tube was as much as 4 feet high by 5 feet wide. The trains were "blown" and "sucked" backwards and forwards. A vacuous, or a pressure, condition of a few inches of water was found sufficient for the propulsion. In 1844, Mr. Brunel recommended the atmospheric system for the South Devon Railway, and by 1846 it was actually laid down nearly the whole way from Exeter to Newton. Four atmospheric trains ran on the line each way daily in 1847. In the life of Brunel, it is stated that 865 horse-power were required to do the work that he had a right to expect would have been done by 300 horse-power. By August 1848 the valve had begun to fail throughout its length. The cost had been 1160*l.* per mile, and in August 1848, just four years after Brunel had advised the trial of the atmospheric system, he reported that he did not recommend its extension, and, in fact, suggested it only as an assistant on inclines. The directors then suspended operations, and, afterwards, locomotives were used throughout.

SEVERAL popular articles on scientific subjects appear in the current number of the *Century Magazine*. Of particular interest are two articles on tornadoes, one by Mr. John R. Musick giving a description of a tornado witnessed by him at Kirksville, Missouri, in April of this year, and another by Prof. Cleveland Abbe on tornadoes in general. Mr. Musick's testimony as to the effects of the tornado is most astonishing. He says that when the storm struck the city, "doors, shutters, roofs, and even whole houses were sent soaring and whirling to a height of three or four hundred feet. I saw the wheel of a wagon or carriage and the bodies of two persons flying up into the storm-cloud. One house was lifted upwards to a height of over one hundred feet, when it seemed to explode into a thousand fragments, which went soaring, whirling and mingling with the other débris." Perhaps the most remarkable experiences were those of three persons who were caught up in the storm, and after being carried nearly a quarter of a mile, were let down so gently that none was killed. Several horses and many other animals were taken up by the storm and carried to considerable distances. One horse was carried two miles by the storm and alighted uninjured. An orchard south of the city had the trees torn up by the roots, carried four or five hundred yards, and piled into some vacant fields. An idea as to the fury of the wind may be formed by the size of the trees uprooted. Some of these were from twelve to eighteen inches in diameter, with roots ten feet in length. The earth from which they had been jerked is said to have looked as if it had been torn by dynamite explosions.

As to the origin of tornadoes, Prof. Cleveland Abbe remarks that the point about which there has, perhaps, been the most uncertainty relates to the rotatory motion of the wind at the centre of the path of destruction. From the information he has been able to gather it appears that generally a west or north-west wind is blowing over the country, with a front of many miles in length, which trends south-west and north-east. This cool north-west wind pushes aside a gentler southerly wind that had been prevailing over that same region during the previous twenty-four hours. In the long belt, or trough, where these two winds meet, the warmer southerly wind is suddenly elevated and cooled by expansion, as also by mixture with the under-current of cold north-west wind. A cloud is thus formed, or in fact rolls of clouds, along the whole front of the area of north-west wind. At certain favourable spots the cloud soon becomes so large as to form a special indraft upwards through its centre, and the ascending wind must necessarily acquire a spiral ascending movement. The direction of rotation in this spiral is almost invariably the same as that of the hurricanes of the Atlantic Ocean, or the general storms attending the areas of low pressure that move eastwards over the United States, namely counter-clockwise.

THE Report of the U.S. Weather Bureau for the year ending June 1898 shows that no time has been lost in developing the Meteorological Service of the West Indies; arrangements have been made for observations being cabled twice daily from several islands to Kingston (Jamaica) and the central office in Washington, and negotiations are being carried on with the French authorities for the co-operation of the observers in Martinique. The maintenance of observations at Havana during the period of hostilities with Spain is also very gratifying. The important work of producing a thoroughly satisfactory kite has seriously occupied the attention of the Weather Bureau; sixteen stations have now been completely equipped, and the observers have all received a course of instruction in Washington. The observations hitherto made in the exploration of the upper air by this means contain much information that is new and of practical importance, independently of their value in making weather forecasts. The Canadian Meteorological Service has established a continuous record of the oscillations of the waves of Lake Ontario, which seem to show a connection with atmospheric conditions. These oscilliations are of much interest from several points of view, and the subject is engaging the attention of the U.S. Weather Bureau.

THE second annual report of the Council of the Röntgen Society shows that steady progress is being made. The Society numbers 148 ordinary members and five honorary members. Fresh evidence is continually received of the value of Röntgen rays in surgery, and there is much useful work open to the Society in the way of stimulating improvements in apparatus and in methods of investigation. The Council announce that Mr. William Noble has consented to be nominated as president for the ensuing year. He was among the earliest workers with X-rays, and has done useful service in radiography and on the physical side of the subject which it is the Society's object to advance.

THE volume of *Sitzungsberichte* of the Royal Bohemian Academy for 1898 contains, amongst other communications, a number of mathematical papers. These include notes on theory of curves, by C. Küpper (Prag); on a property of factorials, and remarks on trigonometric series with positive coefficients, by M. Lerch (Freiburg); on the residues of functions defined by differential equations of higher order, and on a system of semi-curvilinear coordinates, by Michel Petrovitch (Belgrade); on the infinitesimal geometry of certain plane curves, by J. Sobotka (Vienna); a note on spherical harmonics, by Franz Rogel (Barmen); and on the principal propositions of stereographic projection regarded as corollaries of Quetelet and Dandelin's theorem, by Carl Pelz (Prague).

FROM Messrs. Williams and Norgate we have received a copy of the *Sitzungsberichte und Abhandlungen* of the "Isis" Society, of Dresden, for 1898. It contains a paper, by W. Hallwachs, on determinations of the refractive indices of solutions.

In it the author gives an account of his differential method with grazing incidence, for which a double-trough refractometer has been used. The process in question has been applied to solutions of brome-cadmium, sugar, di- and tri-chloracetic acid and their potassium salts; and the author investigates the relation between the refractive index and the degree of concentration with a view of determining whether this is influenced to any extent by dissociation. The experiments show that such an influence, if it exists, is too small to be measurable with exactitude. This result is at variance in the case of brome-cadmium with those obtained by Le Blanc and Rohland, but the discrepancy is attributed to an error.

THE twenty-first of the series of electrical papers published by W. G. Hankel in the *Abhandlungen der k. Sächs. Gesellschaft der Wissenschaften* deals with the thermo-electric and piezo-electric properties of certain crystals, including, amongst others, the formates of barium, lead, strontium and calcium, nitrates of barium and lead and sulphate of potassium. It is illustrated by several diagrams showing the distribution of positive and negative electrification over the faces of the several crystals.

THE general results of the magnetic survey of Sicily and the adjoining islands, commenced in 1890 by Prof. Chistoni and Signor L. Palazzo, were recapitulated in a communication by the latter observer to the *Atti dei Lincei*, vi. (2) 11. In *Terrestrial Magnetism* for June 1899, Signor Palazzo now gives a magnetic chart of Sicily showing the course of the isogonal and isoclinal lines, and the isodynamical lines for the horizontal component. The remarkable deviations produced in these curves by volcanic areas are well shown. Signor Palazzo having been appointed as a delegate at the International Magnetic Conference held in connection with the Bristol meeting of the British Association last year, availed himself of the opportunity for instituting a comparison between the magnetic instruments of the Italian Central Meteorological Office and those of Parc Saint-Maur and Kew. The results of this comparison have been published in the *Atti dei Lincei*, viii. (1) 8 and 9, and the author considers that these comparisons fully establish the trustworthiness of the Italian instruments and methods.

FOLLOWING in the footsteps of Japan and France, which countries in 1894 despatched scientific experts to investigate the outbreak of plague in Hong Kong, Germany decided in the year 1897 to send out a commission to study the plague in India, and in February of that year Dr. Gaffky, Dr. Pfeiffer, Dr. Stricker, and Dr. Dieudonné arrived in Bombay. The results of their labours have just been published in a volume of the *Arbeiten aus dem Kaiserlichen Gesundheitsamt*, and covers no less than 356 large quarto pages, whilst copious illustrations, coloured and otherwise, beautifully executed, serve to elucidate the text. The literature of previous outbreaks of plague in India has been carefully summarised by the authors, and the history of the recent severe epidemic has been traced as accurately as possible. As was to be anticipated, a large portion of the report describes the numerous experimental investigations undertaken by the experts, and the results of these researches form a valuable addition to the already bulky records obtained during previous inquiries. Prominence is given to the encouraging results obtained by Haffkine's method of preventive inoculation, and in this connection mention must be made of an official report recently published in India of inoculations against plague made from May to September last year in Hubli. The actual number of inoculations carried out by Surgeon-Captain Leumann and his staff amounted to some 78,000 altogether, and in summarising the results of his extended experience, Captain Leumann remarks that "inoculation arranges itself by the protection it affords in the foremost rank of methods for dealing with this disease."

AN article on "The Ethics of Vivisection," which appears in the current number of the *Edinburgh Review*, ought to be reprinted and widely distributed as a plain and dignified statement of fact as to the purpose of physiological research and the actual conditions under which it is carried on. So many misleading leaflets and tracts have been published by opponents of experimental work in physiology that all persons desirous of arriving at the truth of the matter should give consideration to the side of the case presented in the article to which reference has been made. In the course of the article the pain deliberately inflicted upon animals for mercenary motives, for sport, for food, for ornament, and other purposes is mentioned, and the very apt remark is made that "the only form of vivisection to which he [an opponent of vivisection] objects is that which furnishes not luxury, amusement, or vanity, but knowledge." But this only meets objections with a *Tu quoque*, and a specific statement of what civilised man owes to experimental physiology is more convincing to the logical mind. Such a statement is given in the article.

REFERRING to the results of the application of the experimental method advocated by Bacon and Harvey, the writer in the *Edinburgh Review* points out that physiologists and biologists "have enriched practical surgery with antiseptic methods and with anæsthesia; with control over hæmorrhage while operating; with a rational and successful treatment of aneurism and of glaucoma; with the power in not a few cases of removing a tumour even from the brain itself. In medicine proper, all that is summed up in the phrase 'heart disease,' all knowledge of arterial tension and its influence on the whole organism, have all been evolved gradually from the basis of Harvey's discovery. All our knowledge of nervous disease is based upon vivisectional experiments, from Charles Bell to Hitzig and Ferrier. Almost all our knowledge of the digestive processes, of angina pectoris and of methods of relieving it, has been gained through experiment. Practical medicine has been enriched through experimental research with such drugs as digitalis, cocaine, croton-chloral, nitrite of amyl; with the method of auscultation; with a knowledge of the cause of tuberculosis, typhoid fever, cholera; with the life-history of parasites; with the cause of myxœdema and related conditions and how to relieve them, and with a life-saving remedy for diphtheria. . . . It is, in fact, no figure of speech, but the simplest of truths, to say that everything of solid value in medicine and surgery is based upon knowledge gained by the experimental method." With this quotation we leave the article, convinced that it will be of much assistance in the spread of truth and the advancement of science.

A SHORT article, illustrated by reproductions from photographs, on the Medanos, or moving sand-hills of the Peruvian desert, is contributed to *Pearson's Magazine* by Mr. George Griffith.

THE following official botanical publications have reached us from the United States:—Sugar as food, by Mary H. Abel (U.S. Department of Agriculture, *Farmers' Bulletin*, No. 93); Mushrooms, II., by Prof. G. F. Atkinson (Cornell Univ. Agricultural Experiment Station, *Bulletin* No. 108); Notes from the South Haven sub-station; Vegetable tests for 1898; Bush fruits for 1898; Combating disease-producing germs; Killing the tubercle bacillus in milk (Michigan State Agricultural College Experiment Station (*Bulletins* Nos. 169–173).

THE *Journal of Applied Microscopy* continues, in the numbers most recently received (May–July), its useful *résumé* of recent work on microscopical technique:—Methods of plant histology, by Prof. C. J. Chamberlain; Current bacteriological literature, by Prof. H. H. Waite; Normal and pathological histology, by Dr. R. M. Pearce; Neurological literature, by Edith M. Brace. Among original communications in the same branch of science we may mention an improvement in the technique of making blood-serum culture media, by Ernest C. Levy; and preparing sections of cochlea for microscopical examination, by M. T. Cook and H. H. Zimmermann.

Two new volumes have been added to the series of brochures published by MM. Georges Carré and C. Naud under the general title of "Scientia." The volumes are: "Les actions moléculaires dans l'organisme," by Prof. H. Bordier, and "La coagulation du sang," by Prof. Maurice Arthus. Each book comprises about one hundred pages, and shows the present state of knowledge of the subject dealt with in it.

THE seventh volume of the renowned "System of Medicine," edited by Prof. Clifford Allbutt, F.R.S., has been published by Messrs. Macmillan and Co., Ltd. The volume continues the treatment of the subject of diseases of the nervous system. In the eighth volume, which will conclude the work, this subject will be completed, and the full sections on mental diseases and diseases of the skin will be added. When the final volume has appeared, it will be reviewed with others not yet noticed in these columns.

THE additions to the Zoological Society's Gardens during the past week include a Purple-faced Monkey (*Semnopithecus cephalopterus*, ♂) from Ceylon, presented by Mrs. Usborne; a Common Badger (*Meles taxus*, ♀), British, presented by Mrs. F. Travers; a Zebu (*Bos indicus*, ♂) from India, presented by Mr. Smith Rylands; two Common Squirrels (*Sciurus vulgaris*), European, presented by Miss E. B. Sparrow; a Martinique Gallinule (*Ionornis martinicus*), captured at sea, presented by Mr. H. A. Pare; a Raven (*Corvus corax*), European, presented Mr. P. Stuart; two Tengmalms Owls (*Nycla tengmalmi*) from Norway, presented by Mr. P. Musters; an Adorned Terrapin (*Chrysemys ornata*) from Central America, presented by Mrs. R. J. Aston; a Common Snake (*Tropidonotus natrix*) from Italy, presented by Mr. T. G. Gunn; a Common Badger (*Meles taxus*) from Siberia, a Common Hamster (*Cricetus frumentarius*, European, a Ring-necked Pheasant (*Phasianus torquatus*) from Mongolia, four Horsfield's Tortoises (*Testudo horsfieldi*) from Central Asia, two Blackish Sternotheres (*Sternothaerus nigricans*) from Madagascar, a Japanese Terrapin (*Clemmys japonica*) from Japan, six Land Lizards (*Lacerta agilis*) from Central Europe, six Crested Anolis (*Anolis cristatellus*) from the West Indies, two Long-snouted Snakes (*Dryophis mycterians*) from India, a Common Snake (*Tropidonotus natrix*), two Common Vipers (*Vipera berus*), British, a Glass Snake (*Ophiosaurus apus*) from Southern Europe, deposited; two Common Wolves (*Canis lupus*, ♂ ♀) from Siberia, two Yellow-tufted Honey-eaters (*Ptilotis auricomis*) from New South Wales, two Nonpareils (*Cyanospiza ciris*, ♂ ♀) from North America, purchased.

OUR ASTRONOMICAL COLUMN.

TEMPEL'S COMET 1899 *c* (1873 II.).—

Ephemeris for 12*h*. *Paris Mean Time.*

1899.	R.A.			Decl.			Br.
	h.	m.	s.	°	′	″	
Aug. 3	20	56	14·6	−25	43	7	
4		57	26·2	26	14	6	3·587
5		58	37·9	26	44	34	
6	20	59	49·8	27	14	29	
7	21	1	1·9	27	43	48	
8		2	14·3	28	12	29	3·447
9		3	26·9	28	40	30	
10	21	4	39·8	−29	7	48	

MARS DURING OPPOSITION 1898-1899.—MM. Flammarion and Antoniadi contribute to *Astr. Nach.* (Bd. 150, No. 3581) the results of their observations of Mars during the last opposition of the planet. The work was done at the Observatory of Juvisy, with an objective by Mailhat of 0·26m. aperture and 3·81m. focal length. The magnifying powers employed were 145, 224, 308, 411, and 607, the best images being obtained with the power of 308. Tables are given showing the progressive diminution in the extent of the polar caps, and of the whitening of the land surface under varying degrees of obliquity of the sun's rays. Two plates accompany the paper, showing the whole of the details observed, and in the description of these several differences are noted in comparison with the data given by Lowell.

As indicating the probable transparency of the Martian atmosphere, mention is made of the visibility of the Mare Tyrrhenum as a black marking quite up to the edge of the disc. The number of canals seen at Juvisy has been thirty-six, the majority of which were large and diffuse. Those easiest seen were Boréosyrtes, Cerberus and Styx. Several observations of gemination were made, which it is thought will throw some light on the cause of the phenomenon.

PHOTOGRAPHY OF NEBULÆ AND STAR CLUSTERS.—At the meeting of May 3 of the Astronomical Society of France, M. L. Rabourdin, in the course of a paper on the history of the subject, showed some remarkably fine photographs of nebulæ and star clusters, and he gives a description of them, and of how they were obtained, in the July number of the Society's *Bulletin* (*Bull. Soc. Ast. Fr.*, July, pp. 289-299). The instrument was the large reflector of the observatory at Meudon, which was kindly placed at M. Rabourdin's disposal by M. Janssen. It has an aperture of one metre and a focal length of three metres, and is thus admirably fitted for the photography of faint objects of extended area. In the same number (pp. 299-304), M. Janssen furnishes some remarks on the above paper, entering fully into the question of astronomical photography, in the course of which he suggests obtaining a photometric scale for the measurement of the brightness of nebulæ by putting standard stars slightly out of focus, thus obtaining small circular discs on the plate instead of points, and then measuring the opacity of these circles.

EXPERIMENTAL INVESTIGATIONS ON TELEGONY.[1]

I. *Introductory.*

THE belief in telegony, or what used to be known as the "infection of the germ" or "throwing back" to a previous sire, has long prevailed. It may for all we know be as old as the belief in "mental impressions," which has had its adherents since at least the time of the patriarchs. During the eighteenth century the "infection" doctrine was frequently discussed by physiologists, and since Lord Morton, in 1820, addressed a letter to the Royal Society on the subject, believers in "infection" have been increasing all over the world, with the result that one seldom now hears of breeders or fanciers who are not influenced by the doctrine, while physicians and others interested in the problems of heredity either as a rule take telegony for granted or see nothing improbable in the "infection" hypothesis.

It must, however, be admitted that, notwithstanding the criticisms of Weismann and others, very different views are entertained by the believers in telegony, not only as to the cause, but as to the results, of "infection." By some telegony is confounded with simple reversion or atavism, while the better informed generally assume that "infection" invariably results in the subsequent offspring repeating more or less accurately the characters of the first or of a previous sire. In a breeders' journal of some standing there appeared recently under the heading "Colour of Animals" the following sentence:—"Greys show in breeding a great tenacity of assertion, as they are few in comparison to other colours in the Stud Book, but they reappear and no doubt go back to the Arab, and prove telegony to be a fact" (*Live Stock Journal*, May 12, 1899, p. 588). This shows simple reversion is sometimes mistaken for telegony. In support of the view that "infec-

---

[1] "Experimental Contributions to the Theory of Heredity. A. Telegony." By Prof. J. C. Ewart, F.R.S., University of Edinburgh. (A paper read before the Royal Society, June 1.)